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Honeywell Docket No. H0002800.34350 US- 4015  
Buchalter Docket No.: H9945-3905

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named  
Inventor: Chi Tse Wu

Serial No:  
10/759444

Filed: January 14, 2004

For: SPUTTERING TARGETS,  
SPUTTER REACTORS,  
METHODS OF  
FORMING CAST INGOTS, AND  
METHODS OF FORMING  
METALLIC ARTICLES

Examiner: Rodney G. McDonald

Art Unit: 1795

## DECLARATION UNDER 37 U.S.C. § 1.132

I, the undersigned, Susan Strothers, hereby declare as follows:

1. I am an employee at Honeywell International Inc. and am an inventor on the above-referenced application.
2. I have been informed that claims in the above-referenced application have been rejected under 35 USC §103 based upon US Issued Patent No. 6113761 (Kardokus). I believe that the rejection is inappropriate as follows:
3. Current claim 67 states: A three-dimensional physical vapor deposition target, comprising:

a material comprising one or more of Cu, Ni, Co, Ta, Al, and Ti; an average grain size of less than or equal to 250 microns within the material; a shape, the shape including at least one cup having a first end and a second end in opposing relation to the first end; the first end having an opening extending therein; the cup having a hollow therein; the hollow extending from the opening in the first end toward the

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second end; the cup having an interior surface defining a periphery of the hollow and an exterior surface extending around the second end at rounded corners; and a sputtering surface defined along the interior surface of the cup, wherein the target is three-dimensional, monolithic and comprises a cast ingot.

5. The original specification discusses the issue of the average grain size within the material (see paragraph 0013). Specifically: "The improvement in deposited film uniformity that can be achieved with materials having smaller grain sizes has led to a desire to incorporate small grain size materials into the sputtering targets. It is found that small grain size materials can be formed within two-dimensional sputtering targets simply by subjecting the target materials to high compression during formation of the materials. Since the two-dimensional targets are essentially flat, high-compression technology can be readily incorporated into the processes of forming two dimensional targets. In contrast, it has proven difficult to form three dimensional targets having small grain sizes therein. It would be particularly desired to form monolithic copper targets having the complex geometries of the Fig. 2 and Fig. 4 target shapes, while also having a small average grain size."
6. The Kardokus reference is not an appropriate reference to use as analogous art in this case, because of this very reason – it is difficult and not intuitive to manufacture a three-dimensional target.
7. Methods utilized at the time of the filing date of the current application just were not the same as those methods being utilized to construct conventional three dimensional targets. One of the most significant hurdles was the inability to get the grain size of the materials in a three dimensional target down to the levels seen in two dimensional targets of the same materials.
8. At the time this application was filed – there was no appreciation or understanding in the art as to how that could be done.
9. The original specification also discusses in paragraph 0006 why it is so difficult to fabricate complex three dimensional targets, such as the Applied Materials,



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Novellus and/or Honeywell three dimensional targets. The manufacture of these targets cannot be analogized to the manufacture of two-dimensional targets.

10. I hereby declare that all statements made herein of my own knowledge are true and that statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Title 18, United States Code, Section 1001, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Executed at Spokane, Washington, this 20th day of April, 11.

By: Susan Strothers

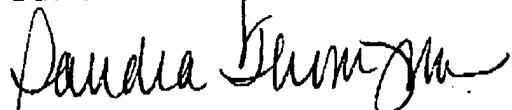
Susan Strothers

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Dated: 4/20/2011

By:

Respectfully submitted,  
Buchalter Nemer, A Professional Corp.



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others, Susan D

|               |                          |               |               |
|---------------|--------------------------|---------------|---------------|
| Name:         | Strothers, Susan D       | Bld:          | E128101       |
| Title:        | Fellow                   | Location:     | Spokane, WA   |
| Job Function: | Engineering              | Country:      | United States |
| SBG:          | SM Specialty Materials   | Band:         | 04            |
| SBU:          | HEM Electronic Materials | Service Date: | 04-Mar-1991   |
| SBE:          | TCH2 SM Technology       | Citizenship:  | USA           |

### Education

| Yr of Completion | Degree/Education Lvl      | Major/Field of Study      | Minor/Specialty | School/Institution           | Complete |
|------------------|---------------------------|---------------------------|-----------------|------------------------------|----------|
| 1991             | Doctorate or PhD          | Metallurgical Engineering |                 | Case Western Reserve Univ OH | Y        |
| 1985             | Master of Science         | Metallurgical Engineering |                 | Case Western Reserve Univ OH | Y        |
| 1984             | Bachelor of Engineering   | Metallurgical Engineering |                 | Case Western Reserve Univ OH | Y        |
|                  | High School or Equivalent |                           |                 |                              | Y        |

## Awards/Patents/Recognitions

| Date        | Description                              |
|-------------|--|
| 10-Jul-1991 | Patent 5,143,500: Quantum Target Method  |
| 14-Aug-2001 | US Patent 6,274,015 Diffusion Bonding    |
| 16-Oct-2001 | Green Belt Certification                 |
| 09-Jan-2002 | Star Award for Code of Conduct Training  |
| 17-Sep-2002 | US Patent 6,451,185B2: Diffusion Bonding |
| 29-Apr-2003 | US Patent 6,555,250 Ni Plated Diff Bond  |
| 22-Sep-2003 | Bronze BRAVO -Driving Stage Gate Process |
| 01-Dec-2003 | DFSS Green Belt Certification            |
| 10-Aug-2004 | HEM 2004 Quest-Best Tool Use/Intel Alloy |
| 08-Nov-2004 | Bronze BRAVO - 2004 SM Tech Conference   |
| 10-Feb-2005 | Silver BRAVO-Patent Portfolio Management |
| 25-Mar-2005 | Peer BRAVO for Tech Help Wire Extrusion  |
| 13-May-2005 | Bronze BRAVO for VPD Involvement         |
| 25-Aug-2005 | Bronze BRAVO for Quest for Excellence    |
| 19-Apr-2006 | Gold Bravo - Copper Freedom to Practice  |
| 05-Nov-2006 | Bronze BRAVO for EB Welding FTP          |
| 17-Nov-2009 | US Patent 7,618,520 PVD Target Construct |
| 03-Aug-2010 | US Patent 7,767,043 Copper Targets       |
| 22-Oct-2010 | Gold Band 4 Bravo Leading HEM Tech Team  |

**Licenses and Certificates**

| <b>Date</b> | <b>Description</b>            |
|-------------|-------------------------------|
| 01-Dec-2003 | Green Belt Certification-DFSS |
| 01-Jan-2004 | Greenbelt for Growth Cert     |
| 21-Dec-2009 | Personal Data Protection-Ldr  |
| 18-May-2009 | PER Leadership Certification  |

**Honeywell Work Experience**

| <b>Date</b> | <b>Title</b>          | <b>Job Function</b> | <b>Band</b> | <b>SBG</b> | <b>SBU</b> | <b>SBE</b>  | <b>SBG</b>                   | <b>SBU</b>  | <b>SBG</b> | <b>SBU</b> | <b>SBE</b> | <b>Location</b> |
|-------------|-----------------------|---------------------|-------------|------------|------------|-------------|------------------------------|-------------|------------|------------|------------|-----------------|
| 05-May-2008 | Fellow                | Engineering         | 04          | SM         | HEM        | TCH2        | HEM                          | TCH2        | SM         | HEM        | TCH2       | Spokane, WA     |
| 01-Jan-2007 | Manager Development   | Technology R&D      | 04          | SM         | HEM        | Spokane, WA | Technology R&D               | 04          | SM         | HEM        | HEM        | Spokane, WA     |
| 31-Mar-2006 | Manager Development   | Technology R&D      | 04          | SM         | SM         | TCH         | Technology R&D               | 04          | SM         | SM         | SM         | Spokane, WA     |
| 01-Aug-2005 | Manager Development   | Technology R&D      | 04          | SM         | SM         | TCH         | Technology R&D               | 04          | SM         | SM         | SM         | Spokane, WA     |
| 23-Jun-2005 | Manager Development   | Commercial          | 04          | SM         | SM         | HEM         | Commercial                   | 04i         | SM         | SM         | HEM        | Spokane, WA     |
| 01-Jan-2004 | Manager - Development | Commercial          | 04i         | SM         | SM         | HEM         | Manager - Development        | 02-Dec-2002 | SM         | SM         | HEM        | Spokane, WA     |
| 01-Jan-2002 | Manager - Product     | Operations          | 04i         | SM         | EMAT       | WFM         | Manager - Product            | 01-Jan-2002 | EMAT       | EMAT       | WFM        | Spokane, WA     |
| 01-Mar-2001 | Manager - Product     | Operations          | 04i         | EMAT       | EMAT       | WFM         | Manager - Business           | 11-Sep-2000 | EMAT       | EMAT       | WFM        | Spokane, WA     |
| 11-Sep-2000 | Manager - Business    | Operations          | 04i         | EMAT       | EMAT       | WFM         | Director - Operations & Tech | 17-Aug-1999 | EMAT       | EMAT       | WFM        | Spokane, WA     |

**Other Work Experience**

| Employer         | Industry | From Date   | Thru Date   | Job Title                      | City      | State | Country |
|------------------|----------|-------------|-------------|--------------------------------|-----------|-------|---------|
| CWRA/NASA-Lewis  |          | 15-May-1985 | 19-Nov-1990 | Graduate Assistant             | Cleveland | OH    | USA     |
| General Electric |          | 15-Nov-1987 | 01-Mar-1991 | Manufacturing Engineer         | Cleveland | OH    | USA     |
| Johnson Matthey  |          | 04-Mar-1991 | 04-Mar-1992 | Senior Development Engr        | Spokane   | WA    | USA     |
| Johnson Matthey  |          | 02-Mar-1992 | 01-Mar-1994 | Production Manager - Targets   | Spokane   | WA    | USA     |
| Johnson Matthey  |          | 02-Mar-1994 | 01-Mar-1995 | Operations Manager - Targets   | Spokane   | WA    | USA     |
| Johnson Matthey  |          | 05-Mar-1995 | 16-Aug-1995 | Operations&Technology Director | Spokane   | WA    | USA     |